

Abstract Submitted
for the APR13 Meeting of
The American Physical Society

CMB Temperature Power Spectrum Measurements and Cosmological Constraints from the 2500 Square Degree SPT-SZ Survey¹ KYLE STORY, University of Chicago, SOUTH POLE TELESCOPE COLLABORATION — The South Pole Telescope (SPT) is a 10-meter millimeter-wavelength telescope located at the geographic South Pole. I will present a measurement of the cosmic microwave background (CMB) temperature power spectrum from the recently completed 2500 square degree SPT-SZ survey. This measurement covers the third to ninth acoustic peaks in the CMB power spectrum, spanning the damping tail. The data are well fit by the standard LCDM model, and improve constraints on the model parameters; in particular, the angular sound horizon θ_s improves by a factor of 2.7. In addition, the datasets show interesting hints of deviations from the LCDM model. Combining the CMB data with low-redshift measurements, the sum of the neutrino masses is constrained to be 0.32 ± 0.11 eV. Using the combined dataset, we find an upper limit on the tensor-to-scalar ratio in primordial power spectrum of $r < 0.11$, and constrain the running of the spectral index in the primordial power spectrum to be $-0.046 < dn_s/d \ln k < -0.003$ at 95% confidence. We have explored other model extensions including curvature, the primordial helium abundance, and the effective number of neutrino species.

¹The SPT is supported by the National Science Foundation through grant ANT-0638937, with partial support provided by NSF grant PHY-1125897, the Kavli Foundation, and the Gordon and Betty Moore Foundation.

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Date submitted: 11 Jan 2013

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